

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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JAN 14 2005

U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte AMIT KUMAR SARKHEL
and CHARLES G. WOYCHIK

Appeal No. 2005-0280
Application No. 09/771,240

ON BRIEF

Before CAROFF, KIMLIN, and GARRIS, Administrative Patent Judges.
CAROFF, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 9-10 and 13-14, all the claims now pending in appellants' application.

The appealed claims are directed to methods for soldering electronic components using a ternary solder alloy composed of tin, bismuth, and silver in specified proportions.

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Claim 9, which is one of three independent claims, is illustrative of the subject matter encompassed by appellants' claims:

9. A method of joining at least two microelectronic components to one another comprising the steps of connecting the components to be joined with a ternary solder alloy consisting essentially of from about 70 to less than 91 wt percent tin, between 6 to about 15 wt % bismuth and 2 to 5 wt % silver.

The prior art references relied upon by the examiner are:

O'Rourke	Re. 32,982	Jul. 11, 1989
Deambrosio	Re. 33,197	Apr. 10, 1990
Gileta	5,361,969	Nov. 8, 1994
Vianco et al. (Vianco)	5,439,639	Aug. 8, 1995
Sarkhel et al. (Sarkhel)	5,730,932	Mar. 24, 1998

Kattner et al. (Kattner) "On the Sn-Bi-Ag Ternary Phase Diagram," Journal of Electronic Materials, vol. 23, No. 7, pp. 603-610, (1994).

The following rejections are before us for review:

I. Claims 9-10 and 13-14 stand rejected under the judicially created doctrine of obviousness-type double patenting in view of claims 12-17 of the Sarkhel patent.

II. Claims 9 and 13-14 stand rejected under 35 U.S.C. § 103 for obviousness in view of Vianco taken in combination with either Deambrosio, O'Rourke, or Gileta.

III. Claim 10 stands rejected under 35 § U.S.C. § 103 for obviousness in view of the references as applied above with respect to claims 9 and 13-14, further in view of Kattner.

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We have carefully considered the entire record in light of the opposing positions taken by the appellants and the examiner. Having done so, we conclude that the examiner has established a prima facie case of obviousness with regard to the applied prior art, and appellants have failed to present a persuasive case in rebuttal. Further, with regard to the double patenting rejection, appellants stipulate on page 4 of their brief that a terminal disclaimer will be filed upon any indication of allowable subject matter. Accordingly, we shall affirm all the rejections at issue on appeal.

In particular, since there is no dispute with regard to the double patenting rejection, that rejection is summarily affirmed.

With regard to the rejections under 35 U.S.C. § 103, we agree with the examiner that Vianco teaches that a tin-silver-bismuth solder alloy can be used in the assembly of electronic devices where the bismuth content of the solder can be as high as 7 weight percent based on the weight of tin. For instance, the last alloy composition appearing in Table 1 of Vianco (column 5, lines 30-40) contains 90.48% tin, 3.28% silver, and 6.23% bismuth. Also, Vianco alludes to a bismuth content of 0-7 wt.% at column 4, lines 51-67.

Appellants do not question the relevance of the secondary references (Deambrosio, O'Rourke, Gileta) as applied by the examiner in the 35 U.S.C. § 103 rejections. Rather, appellants' primary basis for contesting those rejections is premised upon the assertion that Vianco expressly "teaches away" from incorporating bismuth in the ternary alloy composition in amounts exceeding 5 wt.%. This assertion is based on statements appearing in column 4, lines 41-50, and column 5, lines 40-45, of Vianco suggesting that, at relatively low temperatures, bismuth may precipitate out of solution in the form of a tin-bismuth phase when the bismuth content of the ternary alloy composition exceeds 5 wt.%.

Appellants' arguments are unpersuasive essentially for the reasons given in the examiner's answer.

In essence, the statements in Vianco which appellants rely upon do not appear to expressly teach that the bismuth content should not exceed 5 wt.%. Rather, those statements do no more than draw attention to an apparent anomaly without suggesting that the anomaly represents a significant problem to be avoided. Moreover, the statement at column 4, lines 41-50 does not appear to be particularly relevant in any case since it refers to a tin-bismuth binary system rather than the ternary system of interest.

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If appellants are of the view that the anomaly discussed by Vianco would be considered a significant problem by those of ordinary skill in the art, then appellants should have adduced credible evidence on the issue rather than merely making unsupported assertions in their brief.

Respecting claim 10, we reiterate the examiner's point that Kattner appears to recognize the existence of tin-bismuth-silver alloy compositions with relatively high bismuth content through the presentation of phase diagrams. Accordingly, we agree with the examiner that it would have been obvious, within the purview of 35 U.S.C. § 103, to upwardly adjust the bismuth content of the eutectic solder alloy of Vianco to obtain a desirable melting point inasmuch as Vianco teaches that it is bismuth content which is a result effective variable in this regard.

For the foregoing reasons, the decision of the examiner is affirmed.

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AFFIRMED



MARC L. CAROFF
Administrative Patent Judge

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Edward C. Kimlin
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Administrative Patent Judge

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